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10/031892
Attorney Docket Number: 12405

JC14 Rec'd PCT/PTO 22 JAN 2002

PATENTS

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)**

International Application Number: PCT/DE00/02442
International Filing Date: 7/24/00
Priority Date Claimed: 7/23/99
Title of Invention: CABLE WINDER FOR VIDEO ENDSCOPE
Applicant(s) for DO/EO/US: ZAAR, Kersten

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items under 35 U.S.C. 371:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to immediately begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the international Application as filed (35 U.S.C. 371(c)(2))
 - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau)
 - b. ☐ has been transmitted by the International Bureau
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☐ A translation of the International Application into English
7. ☐ Amendments to the claims of the International Application under PCT Article 19:
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau)
 - b. ☐ have been transmitted by the International Bureau
 - c. ☐ have not been made; however, the time limit for making such amendments has **NOT** expired
 - d. ☐ have not been made and will not be made
8. ☐ A translation of the amendments to the claims under PCT Article 19(35 U.S.C. 371(c)(3))
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau)
 - b. ☐ has been transmitted by the International Bureau
 - c. ☐ will follow
10. ☐ A translation of the Annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).
11. ☒ Copy of the
 - a. ☒ International Preliminary Examination Report.
 - b. ☒ International Search Report
12. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98
13. ☒ An Assignment document for recording with a separate cover sheet in compliance with 37 CFR 3.28 and 3.31
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ has been transmitted by the International Bureau
 - c. ☒ will follow
14. ☒ A **FIRST** preliminary amendment
15. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment
16. ☐ A substitute specification
17. ☐ A change of power of attorney and/or address letter.
18. ☐ Applicant claims Small Entity status

19. ☐ Other items of information.
20. ☒ 3 Sheets of drawings are enclosed
21. ☐ The U.S. National Fee (35 U.S.C. 371(c)(1)) and other fees as follows

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 JC13 Rec'd PCT/PTO 22 JAN 2002

NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):				TOTAL
<input type="checkbox"/>	Search Report has been prepared by the EPO or JPO			\$0
<input type="checkbox"/>	International Preliminary Examination fee paid to USPTO (37 CFR 1.482)			\$0
<input type="checkbox"/>	No International Preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))			\$0
<input checked="" type="checkbox"/>	Neither International Preliminary examination fee (37 CFR 1.482) nor International Search fee (37 CFR 1.445(a)(2)) paid to USPTO			\$1,040
<input type="checkbox"/>	International Preliminary Examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)			\$0
<input type="checkbox"/>	Surcharge for furnishing the oath of declaration later than 20 months from the earliest claimed priority date (37 CFR 1.492(e))			\$0
<input type="checkbox"/>	Surcharge for furnishing the oath of declaration later than 30 months from the earliest claimed priority date (37 CFR 1.492(e))			\$0
<input type="checkbox"/>	Processing fee for furnishing the English translation later than the 20 months from the earliest claimed priority date (37 CFR 1.492(f))			\$0
<input type="checkbox"/>	Processing fee for furnishing the English translation later than the 30 months from the earliest claimed priority date (37 CFR 1.492(f))			\$0
<input type="checkbox"/>	Assignment Recordal Sheet			\$0

	Number of Claims Filed	Number of Claims Allowed	Number of Extra Claims	Rate per Extra Claim	
Total Number of Claims Filed	20	20	0	\$18	\$0
Number of Independent Claims Filed	1	3	0	\$80	\$0

	Yes	No	Rate per Application	
Number of Multiple Dependent Claims Filed		0	\$270	\$0

Total Fees Enclosed for Large Entity	\$1,040
Total Fees Enclosed for Small Entity (1/2 of Large Entity)	\$485

- a. ☒ A check in the amount of \$ 1,040.00 to cover the fee is enclosed
- b. ☐ Please charge my deposit account \$ 0 to cover the above fees. A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, including request for extension and payment of extension fees due, when this is not explicitly requested by applicants, with a view toward avoidance of abandonment, to deposit account No. 04-2219, referencing our docket # 12405 Any overpayment should be credited to this account.

Please direct all communication in connection with this application to the undersigned at

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CERTIFICATION UNDER 37 CFR 1.10

I hereby certify that this transmittal letter and the documents referred to as enclosed therein are being deposited with the United States Postal Service on January 22, 2002, in an envelope as "Express Mail Post Office Addressee", mailing label number EV 034971490 US addressed to the Commissioner of Patents and Trademarks, P.O. BOX 2327 Arlington, VA 22202.

Christopher Johnsen
 Name of Person Mailing Paper

Signature of Person Mailing Paper

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: ZAAR, Kersten
Serial Number: to be assigned
PCT Application Number: PCT/DE00/02442
Filed: July 23, 1999
Title: CABLE WINDER FOR VIDEO ENDOSCOPE
Attorney Docket Number: 12405

PRELIMINARY AMENDMENT

Hon. Commissioner of
Patents and Trademarks
Box PCT
Washington, D.C. 20231

January 22, 2002

Sir:

Please amend the newly submitted application described above as follows:

In the claims

Please add the following claims:

12. Kabeltrommel nach Anspruch 3, dadurch gekennzeichnet, dass im Hohlraum (11) eine wiederaufladbare Batterie (12) angeordnet ist, die mit dem Gestell (4) mechanisch verbunden und elektrisch an den Schleifring (31) angeschlossen ist, und dass an der Abdeckscheibe (10) eine mit der Batterie (12) elektrisch verbundene Steckerbuchse (17) für Gleichspannung angebracht ist.
13. Kabeltrommel nach Anspruch 3, dadurch gekennzeichnet, dass im Hohlraum (11) ein mit dem Gestell (4) mechanisch verbundenes Netzteil (13) angeordnet ist, das

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elektrisch an den Schleifring (31) angeschlossen ist, und dass an der Abdeckscheibe (10) eine mit dem Netzteil (13) verbundene Steckerbuchse für Wechselspannung (18) angeordnet ist.

14. Kabeltrommel nach Anspruch 4, dadurch gekennzeichnet, dass im Hohlraum (11) ein mit dem Gestell (4) mechanisch verbundenes Netzteil (13) angeordnet ist, das elektrisch an den Schleifring (31) angeschlossen ist, und dass an der Abdeckscheibe (10) eine mit dem Netzteil (13) verbundene Steckerbuchse für Wechselspannung (18) angeordnet ist.

15. Kabeltrommel nach Anspruch 3, dadurch gekennzeichnet, dass der zentral liegende Hohlraum (11) der Kabeltrommel (1) von einem ringförmigen Hohlraum (19) umgeben ist, in dem die Lampen (25, 26) angeordnet sind und in den der Anfang des mindestens einrn Lichtleiterkabels (28, 29) eingeführt ist.

16. Kabeltrommel nach Anspruch 4, dadurch gekennzeichnet, dass der zentral liegende Hohlraum (11) der Kabeltrommel (1) von einem ringförmigen Hohlraum (19) umgeben ist, in dem die Lampen (25, 26) angeordnet sind und in den der Anfang des mindestens einrn Lichtleiterkabels (28, 29) eingeführt ist.

17. Kabeltrommel nach Anspruch 5, dadurch gekennzeichnet, dass der zentral liegende Hohlraum (11) der Kabeltrommel (1) von einem ringförmigen Hohlraum (19) umgeben ist, in dem die Lampen (25, 26) angeordnet sind und in den der Anfang des mindestens einrn Lichtleiterkabels (28, 29) eingeführt ist.

18. Kabeltrommel nach Anspruch 7, dadurch gekennzeichnet, dass an der Wandung des ringförmigen Hohraumes (19) nahe den Lampen (25, 26) ein vom Netzteil (13) mit Strom versorgter Lüfter (27) zum Kühlen der Lampen (25, 26) angeordnet ist.

19. Kabeltrommel nach [einem der vorhergehenden] Ansprüche 2, dadurch gekennzeichnet, dass die Lampen (25, 26) als Bogenlampen ausgebildet sind.

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20. Kabeltrommel nach [einem der vorhergehenden] Ansprüche 3, dadurch gekennzeichnet, dass die Lampen (25, 26) als Bogenlampen ausgebildet sind.

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Version with Markings to Show Changes Made

4. Kabeltrommel nach Anspruch 2 [oder 3], dadurch gekennzeichnet, dass im Hohlraum (11) eine wiederaufladbare Batterie (12) angeordnet ist, die mit dem Gestell (4) mechanisch verbunden und elektrisch an den Schleifring (31) angeschlossen ist, und dass an der Abdeckscheibe (10) eine mit der Batterie (12) elektrisch verbundene Steckerbuchse (17) für Gleichspannung angebracht ist.
5. Kabeltrommel nach Anspruch 2 [bis 4], dadurch gekennzeichnet, dass im Hohlraum (11) ein mit dem Gestell (4) mechanisch verbundenes Netzteil (13) angeordnet ist, das elektrisch an den Schleifring (31) angeschlossen ist, und dass an der Abdeckscheibe (10) eine mit dem Netzteil (13) verbundene Steckerbuchse für Wechselspannung (18) angeordnet ist.
6. Kabeltrommel nach Anspruch 2 [bis 5], dadurch gekennzeichnet, dass der zentral liegende Hohlraum (11) der Kabeltrommel (1) von einem ringförmigen Hohlraum (19) umgeben ist, in dem die Lampen (25, 26) angeordnet sind und in den der Anfang des mindestens einen Lichtleiterkabels (28, 29) eingeführt ist.
8. Kabeltrommel nach Anspruch 6 [oder 7], dadurch gekennzeichnet, dass an der Wandung des ringförmigen Hohlraumes (19) nahe den Lampen (25, 26) ein vom Netzteil (13) mit Strom versorgter Lüfter (27) zum Kühlen der Lampen (25, 26) angeordnet ist.
9. Kabeltrommel nach [einem der vorhergehenden] Ansprüche 1, dadurch gekennzeichnet, dass die Lampen (25, 26) als Bogenlampen ausgebildet sind.
10. Kabeltrommel nach Anspruch 1 [bis 8], dadurch gekennzeichnet, dass die Lampen (25, 26) als Xenon-Lampen ausgebildet sind.
11. Kabeltrommel nach Anspruch 1 [bis 8], dadurch gekennzeichnet, dass die Lampen (25, 26) als Metall-Halid-Lampen ausgebildet sind.

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Claims as Amended

4. Kabeltrommel nach Anspruch 2, dadurch gekennzeichnet, dass im Hohlraum (11) eine wiederaufladbare Batterie (12) angeordnet ist, die mit dem Gestell (4) mechanisch verbunden und elektrisch an den Schleifring (31) angeschlossen ist, und dass an der Abdeckscheibe (10) eine mit der Batterie (12) elektrisch verbundene Steckerbuchse (17) für Gleichspannung angebracht ist.
5. Kabeltrommel nach Anspruch 2, dadurch gekennzeichnet, dass im Hohlraum (11) ein mit dem Gestell (4) mechanisch verbundenes Netzteil (13) angeordnet ist, das elektrisch an den Schleifring (31) angeschlossen ist, und dass an der Abdeckscheibe (10) eine mit dem Netzteil (13) verbundene Steckerbuchse für Wechselspannung (18) angeordnet ist.
6. Kabeltrommel nach Anspruch 2, dadurch gekennzeichnet, dass der zentral liegende Hohlraum (11) der Kabeltrommel (1) von einem ringförmigen Hohlraum (19) umgeben ist, in dem die Lampen (25, 26) angeordnet sind und in den der Anfang des mindestens einen Lichtleiterkabels (28, 29) eingeführt ist.
8. Kabeltrommel nach Anspruch 6, dadurch gekennzeichnet, dass an der Wandung des ringförmigen Hohlraumes (19) nahe den Lampen (25, 26) ein vom Netzteil (13) mit Strom versorgter Lüfter (27) zum Kühlen der Lampen (25, 26) angeordnet ist.
9. Kabeltrommel nach Ansprüche 1, dadurch gekennzeichnet, dass die Lampen (25, 26) als Bogenlampen ausgebildet sind.
10. Kabeltrommel nach Anspruch 1, dadurch gekennzeichnet, dass die Lampen (25, 26) als Xenon-Lampen ausgebildet sind.
11. Kabeltrommel nach Anspruch 1, dadurch gekennzeichnet, dass die Lampen (25, 26) als Metall-Halid-Lampen ausgebildet sind.

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REMARKS

The foregoing amendments are primarily for the purpose of eliminating multiple dependencies, and placing the claims in proper form.

Respectfully submitted,



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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: ZAAR, Kersten

Serial Number: 10/031,892

PCT Application Number: PCT/DE00/02442

Filed: January 22, 2002

Title: CABLE WINDER FOR VIDEO ENDOSCOPE

Attorney Docket Number: 12405

PRELIMINARY AMENDMENT

Hon. Commissioner of
Patents and Trademarks
Box PCT
Washington, D.C. 20231

June 10, 2002

Sir:

Please amend the newly submitted application described above as follows:

In the Claims:

Please amend the following claims:

12. Cable drum according to claim 3, characterized by the fact that in the hollow space (11) a re-chargeable battery (12) is arranged, which is mechanically attached to the stand (4) and electrically connected to the slip ring (31), and that at the cover plate (10) a plug socket (17) for DC voltage, electrically connected with the battery (12), is attached.
13. Cable drum according to claim 3, characterized by the fact that in the hollow space (11) a power supply (13) connected mechanically with the stand (4) is arranged, which is electrically attached to the slip ring (31), and that at the cover plate (10) a plug socket for AC voltage (18), connected with the power supply (13), is arranged.

14. Cable drum according to claim 4, characterized by the fact that in the hollow space (11) a power supply (13) connected mechanically with the stand (4) is arranged, which is electrically attached to the slip ring (31), and that at the cover plate (10) a plug socket for AC voltage (18), connected with the power supply (13), is arranged.

15. Cable drum according to claim 3, characterized by the fact that the centrally located hollow space (11) of the cable drum (1) is surrounded by a ring-shaped hollow space (19), in which the lamps (25, 26) are arranged and into which the beginning of at least one optical cable (28, 29) is inserted.

16. Cable drum according to claim 4, characterized by the fact that the centrally located hollow space (11) of the cable drum (1) is surrounded by a ring-shaped hollow space (19), in which the lamps (25, 26) are arranged and into which the beginning of at least one optical cable (28, 29) is inserted.

17. Cable drum according to claim 5, characterized by the fact that the centrally located hollow space (11) of the cable drum (1) is surrounded by a ring-shaped hollow space (19), in which the lamps (25, 26) are arranged and into which the beginning of at least one optical cable (28, 29) is inserted.

18. Cable drum according to claim 7, characterized by the fact that at the wall of the ring-shaped hollow space (19) near the lamps (25, 26) a fan (27) for cooling the lamps (25, 26) supplied with current by the power supply (13) is arranged.

19. Cable drum according to claim 2, characterized by the fact that the lamps (25, 26) are designed as arc lamps.

20. Cable drum according to claim 1, characterized by the fact that the lamps (25, 26) are designed as arc lamps.

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Versions with Markings to Show Changes Made

4. Cable drum according to claim 2 [or 3], characterized by the fact that in the hollow space (11) a re-chargeable battery (12) is arranged, which is mechanically attached to the stand (4) and electrically connected to the slip ring (31), and that at the cover plate (10) a plug socket (17) for DC voltage, electrically connected with the battery (12), is attached.
5. Cable drum according to claim 2 [to 4], characterized by the fact that in the hollow space (11) a power supply (13) connected mechanically with the stand (4) is arranged, which is electrically attached to the slip ring (31), and that at the cover plate (10) a plug socket for AC voltage (18), connected with the power supply (13), is arranged.
6. Cable drum according to claim 2 [to 5], characterized by the fact that the centrally located hollow space (11) of the cable drum (1) is surrounded by a ring-shaped hollow space (19), in which the lamps (25, 26) are arranged and into which the beginning of at least one optical cable (28, 29) is inserted.
8. Cable drum according to claim 6 [or 7], characterized by the fact that at the wall of the ring-shaped hollow space (19) near the lamps (25, 26) a fan (27) for cooling the lamps (25, 26) supplied with current by the power supply (13) is arranged.
9. Cable drum according [to one of the preceding] claims 1, characterized by the fact that the lamps (25, 26) are designed as arc lamps.
10. Cable drum according to claim 1 [to 8], characterized by the fact that the lamps (25, 26) are designed as xenon lamps.
11. Cable drum according to claim 1 [to 8], characterized by the fact that the lamps (25, 26) are designed as metal halide lamps.

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Claims as Amended

4. Cable drum according to claim 2, characterized by the fact that in the hollow space (11) a re-chargeable battery (12) is arranged, which is mechanically attached to the stand (4) and electrically connected to the slip ring (31), and that at the cover plate (10) a plug socket (17) for DC voltage, electrically connected with the battery (12), is attached.

5. Cable drum according to claim 2, characterized by the fact that in the hollow space (11) a power supply (13) connected mechanically with the stand (4) is arranged, which is electrically attached to the slip ring (31), and that at the cover plate (10) a plug socket for AC voltage (18), connected with the power supply (13), is arranged.

6. Cable drum according to claim 2, characterized by the fact that the centrally located hollow space (11) of the cable drum (1) is surrounded by a ring-shaped hollow space (19), in which the lamps (25, 26) are arranged and into which the beginning of at least one optical cable (28, 29) is inserted.

8. Cable drum according to claim 6, characterized by the fact that at the wall of the ring-shaped hollow space (19) near the lamps (25, 26) a fan (27) for cooling the lamps (25, 26) supplied with current by the power supply (13) is arranged.

9. Cable drum according to claim 1, characterized by the fact that the lamps (25, 26) are designed as arc lamps.

10. Cable drum according to claim 1, characterized by the fact that the lamps (25, 26) are designed as xenon lamps.

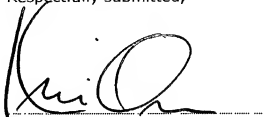
11. Cable drum according to claim 1, characterized by the fact that the lamps (25, 26) are designed as metal halide lamps.

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REMARKS

The foregoing amendments are primarily for the purpose of eliminating multiple dependencies, and placing the claims in proper form.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Keith H. Orum', is written over a horizontal dotted line.

Keith H. Orum
Attorney for Applicant
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Cable drum for a video endoscope

State of the art

The invention originates from a cable drum for a video endoscope according to the kind of the main claim.

From the DE-OS 197 48 795 such a cable drum for a video endoscope designed as probe is well known, in whose top besides a video sensor one or several light-emitting diodes (LED) or bulbs for the lighting of the surrounding to be recorded by the video camera are arranged. However, the strength of the light radiated from such lamps is too small for many applications. The frequency spectrum of this light is limited as well, so that the light does not show the properties of daylight quality and usually has a bluish or yellowish color. In the long run the space required by the light emitting diodes or the bulbs leads to a relatively large overall diameter of the probe top, so that thereby the spectrum of the application possibilities of the well-known endoscope is severely limited.

The invention and its advantages

The cable drum according to the invention for a video endoscope designed as probe with the characteristic features of the main claim, has in contrast to this the advantage to provide light with daylight quality and larger strength by means of built in lamps. This light is conducted through optical cables to the top of the endoscope during the winding up and winding off of the probe.

After a favorable embodiment of the invention a circular cover plate is firmly connected with the stand, which covers a central and open towards the front hollow space of the cable drum, which accordingly is in particular suitable for the accommodation of such accessories for the endoscope, which are to be fastened to the stand or to the cover plate, because too many rotation movements can impair the operability of the concerning accessories.

After a further favorable embodiment of the invention plug sockets which are electrically interconnected with the slip ring at the cover plate are arranged for the output of the signals supplied by the video camera, to which different output devices for video signals can be attached through plugs in a simple manner.

After a further favorable embodiment of the invention a re-chargeable battery is arranged in the hollow space, which is mechanically attached to the stand and electrically connected to the slip ring, whereby at the cover plate a plug socket for DC voltage, electrically connected with the battery, is attached. Additionally the battery can be attached to the stand outside of the hollow space. Thereby a network-independent

Description of the design example:

In Fig. 1 a cable drum 1 for a video endoscope 3 designed as probe 2 is shown in side view. It is especially used in the industry for the investigation of unlighted cavities and ducts. The cable drum 1 is held by a stand 4 with two feet 5 and 6 and a hand grip 7, which has in the chosen layout the form of a star with three rays 4, 5, and 6, in whose center 8 a horizontal axle 9, which is described below in more detail, is arranged on which the cable drum 1 far situated, is pivoted arranged.

In accordance with Fig. 1 and 2 a circular cover plate 10 is firmly connected with the stand 4; the cover plate 10 covers toward the front a central hollow space 11 of the cable drum 1, which is located behind it; in which necessary accessories for the operation of the endoscope 3 can be located, as for example a re-chargeable battery 12 and a power supply 13. Further arranged at the immovable cover plate 10 are plug sockets 14 and 15 for the output of the signals which are supplied by a video sensor 16 for color recordings which is arranged at the end of the probe 2, a further plug socket for DC voltage 17, and a plug socket for AC 18, in order to supply the power supply 13 with voltage.

The central located hollow space 11 of the cable drum 1 is surrounded by a further ring-shaped hollow space 19, in which further accessories 20 to 23 of the endoscope 3 can be located, and in which especially a circuit 24 for the control of the video sensor 16 and lamps 25 and 26 are arranged.

Depending upon the design of the cable drum 1 according to the invention the signals supplied by the video sensor 16 can be output directly through a slip ring 31, which is described below in more detail, and over the plug sockets 14 and 15, in order to be analyzed. It is also possible to design the circuit 24 in such a manner that the video signals of it are analyzed, in order to produce finished video signals, which are output over the slip ring 31 and the plug sockets 14 or 15 for the drive of a data terminal.

The lamps 25, 26 supply light of daylight quality, can thus be called daylight lamps and are designed as arc lamps, as xenon lamp or as metal halide lamps, for whose operation high voltage start units 25', 26' (see Fig. 3) are necessary. In the present design example the lamps 25, 26 exhibit lamp reflectors, which have an elliptical form when viewed as a cut along the longitudinal axis of the lamp, in order to bundle the radiated light as far as possible. It is also conceivable to use for this purpose focusing optics, which are located in front of the lamps. The lamps 25, 26 and the video sensor 16 are supplied with current by the power supply 13. The heat development of the lamps 25, 26, which each use up to 300 Watts, makes it in addition necessary to arrange in their proximity the fan 27 for the cooling of the lamps 25, 26, which is likewise supplied with current from the power supply 13. In order to protect the optical cables 28, 29 against overheating through larger luminous intensity, it is possible to arrange infrared filters between the lamps 25, 26 and the front surfaces of the optical cables of 28, 29.

The cable drum 1 serves primarily for winding up the probe 2, which consists of a probe

protection casing 2', in which the optical cables 28 and 29 and electrical wires 30 are led. The optical cables 28, 29 can be manufactured from glass or from plastic. Modern light conductors enable here probe lengths up to 30 meters. The wires 30 supply the video sensor 16 on the one hand with voltage and can on the other hand transmit the electrical signals supplied by the video sensor 16 through the slip ring 31, which is described below in more detail, directly to the plug sockets 14 and 15, in order to be analyzed.

The lamps 25 and 26 are arranged in such a way opposite the surfaces 28' and 29' at the beginning of the optical cables 28 and 29 that the light radiated from the lamps 25 and 26 is coupled completely into the optical cables 28 and 29. Through the optical cables 28 and 29 the light is conducted to the video sensor 16 arranged at the end of the probe 2, at whose face on the one hand the individual light conductors end, so that the light conducted in them can be radiated, and at whose face on the other hand a sensor optics is arranged, over which the surrounding lit up by the light of the light conductor can be recorded. The probe 2 and the video sensor 16 have here a mostly identical diameter, which can, depending on the application, amount to 5 mm, 8 mm, 10 mm or 12.7 mm.

In Fig. 2 a cut through the cable drum 1 along the bent line A-A in Fig. 1 is shown. The stand 4 with the handgrip 7 and the foot 5 and the probe winding 2" can be seen. This perspective permits a view both into the central hollow space 11 and into the ring-shaped hollow space 19 of the cable drum 1. The lamps 25 and 26 arranged in the ring-shaped hollow space 19 including their voltage supply lines 32 and 33 are concretely recognizable with the selected line of sight. The optical cables 28 and 29 are drawn dashed, as with the selected line of sight the ring-shaped hollow space 19 is covered by the central hollow space 11 of the cable drum 1 within the area, within which the optical cables 28, 29 a guided for a bit, before they emerge at an outlet position 34 from the circular hollow space 19.

Also shown in Fig. 2 is the axle 9, which is firmly connected with the stand 4. The axle 9 is designed as a pipe to accommodate electrical wires and exhibits on its side opposite to the stand 4 a holding disk 35 to axially mount the cable drum 1 on the axle 9 and in addition a slip ring 31, which is electrically connected to the wires led inside the axle 9 (see in particular for this Fig. 3) and whose lateral surface is in electrical sliding contact both with the voltage supply lines 32 and 33 of the lamps 25 and 26 and with the electrical wires 30 of the video sensor 16. Finally a cranking grasp 39 is attached at the cable drum 1, in order to be able to rotate the cable drum 1 manually.

Also drawn dashed in Fig. 2 is an additional housing 40, which can be mounted on the stand 4, in which the power supply 13 and the battery 12 can be arranged.

In Fig. 3 without consideration of the internal structure of the cable drum 1 some electrical details concerning the core of the invention are represented. The axle 9 firmly connected mechanically with the stand 4 is shown as a pipe, on which the cover plate 10 is fastened. Attached to it is for example the plug socket 18 for AC voltage, which is connected with the power supply 13 and the plug socket 15 for the video sensor 16.

The lines 36 for the voltage supply of the lamps 25 and 26 and the video sensor 16, attached to the power supply 13, are led within the tubular axle 9 up to the slip ring 31 sitting on top of it and are connected electrically with the slip ring contact 31' for the voltage supply of the video sensor 16 and with the slip ring contacts 31" and 31"' for the voltage supply of the lamps 25 and 26. The sliding contact 30a' connected with the electrical wire 30a for the voltage supply of the video sensor 16 is here in electrical connection with the slip ring contact 31'. The sliding contact 33' connected with the electrical wire 33 for the voltage supply of the lamp 26 is connected with the slip ring contact 31". The sliding contact 32' connected with the electrical wire 32 for the voltage supply of the lamp 25 is electrically connected with the slip ring contact 31"'. Finally also the signal line 30b of the video sensor 16 is connected with a sliding contact 30b' and has an electrical connection with the slip ring contact 30"". This one is connected with the plug socket 15 for the video sensor 16 through a video signal line 38 led inside the axle 9, to which a circuit can be attached for the analysis of the video signals. Here the sliding contacts 30a', 30b', 32' and 33' are mechanically fixed but electrically insulated connected with the internal shell-shaped part 37 of the cable drum 1.

Drawn in Fig. 3 is also the holding disk 35, which sits firmly on the axle 9 and prevents an axial shifting of the cable drum 1, which is mounted pivoted on the axle 9.

During operation of the probe 2 the light of the lamps 25 and 26 is coupled into the optical cables 28 and 29, which unite together with the electrical wires 30a and 30b for the video sensor 16 to a probe 2 and emerge afterwards from the interior of the cable drum 1 through the outlet position 34. In Fig. 3, during the rotating motion of the cable drum 1 accompanied by the winding up and off of the probe 2 the stand 4, the axle 9, the cover plate 10, the slip ring 31, and the holding disk 35 remain stationary in their base position. Set into motion together with the cable drum 1 are only the lamps 25, 26, the optical cables 28, 29 and the electrical wires 30a, 30b, 32 and 33 including the sliding contacts 30a', 30b', 32' and 33'.

All features represented in the description, the following claims and the drawings can be substantial for the invention both individually and in arbitrary combination with one another.

Reference number list

1	Cable drum
2	Probe
2'	Probe protection casing
2"	Probe winding
3	Video endoscope
4	Stand
5, 6	Feet of the stand 5
7	Hand grip
8	Center of the stand 5
9	Axle
10	Cover plate
11	Central hollow space of the cable drum 1
12	Battery
13	Power supply
14, 15	Plug sockets for the video sensor
16	Video sensor
17	Plug socket for DC voltage
18	Plug socket for AC voltage
19	Ring-shaped hollow space of the cable drum 1
20 to 23	Further accessories
24	Circuit for controlling the video sensor 16
25, 26	Lamp, daylight lamp
25', 26'	High voltage start units of the lamps 25, 26
27	Fan
28, 29	Optical cable
28', 29'	Surfaces at the beginning of the optical cables
30	Electrical wires for the video sensor 16
30a	Voltage supply line of the video sensor 16
30b	Signal line of the video sensor 16
30a', 30b'	Sliding contacts
31	Slip ring
31', 31"	Slip ring contacts
31"', 31''''	Slip ring contacts
32, 33	Voltage supply lines of the lamps 25, 26
32', 33'	Sliding contacts
34	Outlet position
35	Holding disk
36	Lines outgoing from the power supply 13
37	Internal shell-shaped part of the cable drum 1
38	Video signal line
39	Cranking grasp
40	Additional housing

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Cable drum for a video endoscope

Summary

A cable drum (1) for a video endoscope (3) which is designed as probe (2) with at least one optical cable (28) is suggested, whose beginning is inserted into the cable drum (1), whereby light can be coupled into the front surface (28') of at least one optical cable (28) of each daylight lamp (25) arranged in the cable drum (1)

Fig. 1

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Cable drum for a video endoscope

Claims

1. Cable drum for a video endoscope,
 - with a stand (4) on which the cable drum (1) is pivoted arranged,
 - with an endoscope (3), designed as probe (2), which exhibits a video sensor (16) with connected lines (30) for the voltage supply of the video sensor (16) and for the transfer of the signals supplied from the video camera,
 - whose lines (30) are wound up on the cable drum (1) and are electrically interconnected with a slip ring (31) attached to the stand (4),
 - characterized by the fact that the probe (2) exhibits at least one optical cable (25, 29), whose beginning is inserted into the cable drum (1),
 - that the front surfaces of the optical light guides at the beginning of at least one optical cable (28, 29) are arranged in such a manner opposite each one daylight lamp (25, 26) connected with the cable drum (1) that light can be coupled to the front surfaces,
 - that the front surfaces of the optical light guides are arranged at the end of at least one optical cable (28, 29) close to the video sensor (16) for the lighting of the

surrounding to be filmed by the video sensor (16) with the light emerging from the ends of the optical light guides and
 - that the daylight lamps (25, 26) are supplied with electric current through the slip ring (31).

2. Cable drum according to claim 1, characterized by the fact that a circular cover plate (10) is firmly connected with the stand (4), which covers a central and open towards the front hollow space (11) of the cable drum (1).
3. Cable drum according to claim 2, characterized by the fact that plug sockets (14, 15) which are electrically interconnected with the slip ring (31) at the cover plate (10) are arranged for the output of the signals supplied by the video sensor (16).
4. Cable drum according to claim 2 or 3, characterized by the fact that in the hollow space (11) a re-chargeable battery (12) is arranged, which is mechanically attached to the stand (4) and electrically connected to the slip ring (31), and that at the cover plate (10) a plug socket (17) for DC voltage, electrically connected with the battery (12), is attached.
5. Cable drum according to claim 2 to 4, characterized by the fact that in the hollow space (11) a power supply (13) connected mechanically with the stand (4) is arranged, which is electrically attached to the slip ring (31), and that at the cover plate (10) a plug socket for AC voltage (18), connected with the power supply (13), is arranged.
6. Cable drum according to claim 2 to 5, characterized by the fact that the centrally located hollow space (11) of the cable drum (1) is surrounded by a ring-shaped hollow space (19), in which the lamps (25, 26) are arranged and into which the beginning of at least one optical cable (28, 29) is inserted.
7. Cable drum according to claim 6, characterized by the fact that in the ring-shaped hollow space (19) a circuit (24) is arranged for the control of the video camera (16).
8. Cable drum according to claim 6 or 7, characterized by the fact that at the wall of the ring-shaped hollow space (19) near the lamps (25, 26) a fan (27) for cooling the lamps (25, 26) supplied with current by the power supply (13) is arranged.
9. Cable drum according to one of the preceding claims, characterized by the fact that the lamps (25, 26) are designed as arc lamps.
10. Cable drum according to claim 1 to 8, characterized by the fact that the lamps (25, 26) are designed as xenon lamps.
11. Cable drum according to claim 1 to 8, characterized by the fact that the lamps (25, 26) are designed as metal halide lamps.

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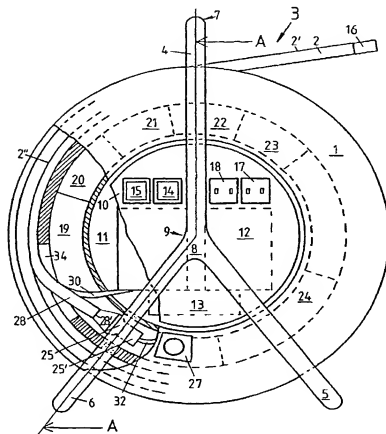
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[Fortsetzung auf der nächsten Seite]

(54) Title: CABLE WINDER FOR VIDEO ENDOSCOPE

(54) Bezeichnung: KABELTROMMEL FÜR EIN VIDEO-ENDOSKOP



(57) Abstract: The invention relates to a cable winder (1) for a video endoscope (3) designed as a probe (2) with at least one optical fibre cable (28). The front end of said video endoscope is inserted into the cable winder (1), whereby light can be introduced into the front surface (28') of the at least one optical fibre cable (28) through one of a plurality of daylight lamps (25) arranged within said cable winder (1).

(57) Zusammenfassung: Es wird eine Kabeltrommel (1) für ein als Sonde (2) mit mindestens einem Lichtleiterkabel (28) ausgebildetes Video-Endoskop (3) vorgeschlagen, dessen Anfang in die Kabeltrommel (1) eingeführt ist, wobei in die Stirnfläche (28') des mindestens einen Lichtleiterkabels (28) von je einer in der Kabeltrommel (1) angeordneten Tageslichtlampe (25) Licht einkoppelbar ist.



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**DECLARATION FOR UTILITY OR
DESIGN
PATENT APPLICATION
(37 CFR 1.63)**

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Initial Filing

OR

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Submitted after
Initial Filing
(surcharge (37
CFR 1.16 (e))
required)

Attorney Docket Number: 12405
First Named Inventor: ZAAR, Kersten
Application Number: 10/031,892
Filing Date: January 22, 2002
Group Art Unit:
Examiner Name:

As a below named inventor, I hereby declare that:

My residence, mailing address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

CABLE WINDER FOR VIDEO ENDOSCOPE

(Title of the Invention)

the specification of which



is attached hereto

or



was filed on 22 January 2002 as United States Application Number or PCT International
(DD/MM/YYYY)

Application Number 10/031,892 and was amended on _____
(DD/MM/YYYY)

(if applicable).

I hereby state that I reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365 (b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (DD/MM/YYYY)	Priority Not Claimed	Certified Copy Attached? YES NO
199 33 859.0	GERMANY	23 July 1999		NO
PCT/DE00/02442	GERMANY	24 July 2000		NO

____ Additional foreign application numbers are listed on a supplemental priority data sheet attached hereto:

DECLARATION-----Utility or Design Patent Application

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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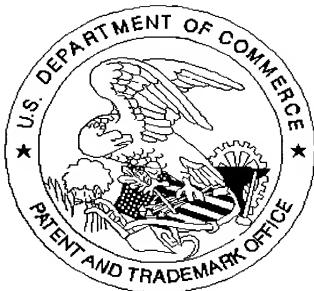
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